

Urban Bus New Engine Emission Standards



**October 20 - 21, 2005
Board Hearing
Sacramento, CA**

Urban Bus



Adopted Fleet Rules For Transit Agencies

- Adopted by Board in 2000
- Fuel Path Selection that Regulates New Bus Purchases
 - Transit agencies chose by January 31, 2001
 - Non-revocable decision to make 85% of annual purchases alternative fuel if on that path
- 57% of CA Transit Agencies Chose Diesel Path
 - Operate 38% of the CA Urban Bus Fleet
- Other Provisions Addressing NO_x and PM Emission Reductions From Existing Fleet

Urban Bus vs. Truck Engine NO_x Standards (g/bhp-hr)

| Engine Type | 2000 | 2004 | 2007 | 2010 |
|---------------------|---------|---------|-------|------|
| Urban Bus Diesel | 4.0 | 0.5* | 0.2 | 0.2 |
| Urban Bus Alt. Fuel | 4.0 *** | 2.2 *** | 0.2 | 0.2 |
| Truck HDE | 4.0 | 2.2 | 1.2** | 0.2 |

* 2004 Diesel hybrid electric UB at 1.8 g/bhp-hr

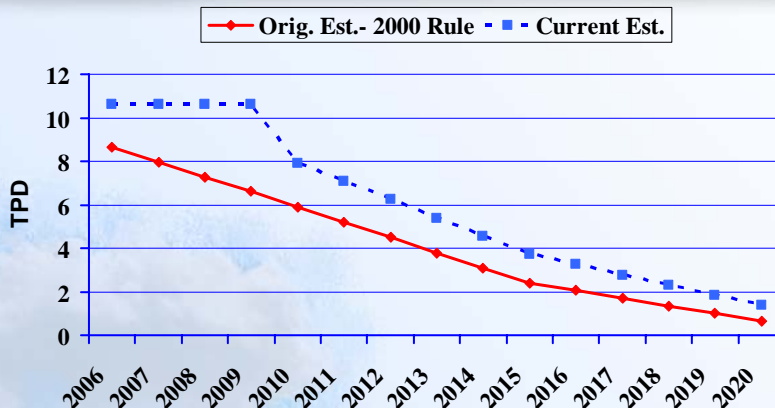
**Expected certification based on averaging

*** Actual emissions lower

Current Status

- Alt. Fuel Agencies Buying CNG and Other Non-Diesel Technology
 - CNG Buses Likely Available in 2007 meeting 0.2g NO_x Standard
- Diesel Path Agencies Not Buying New Urban Buses
 - No Diesel Buses Available until 2010
 - Keeping Older Buses in Service
 - Expected Emission Reductions Not Achieved

Emission Reductions Expected vs. Actual



Staff Proposal

- Initial Statement of Reasons
 - 3 Options, No Recommendations
- Today's Proposal
 - Staff Recommendation

Option 1: No Change

- New Diesel Urban Bus Purchase Deferred until 2010
 - No Diesel Path Transit Agency Expected to Switch to Alternative Fuel
 - Older Urban Buses Remain in Service
- Delayed Purchase Results in:
 - Higher Emissions Through 2010
 - Slightly Lower Emissions Post-2010

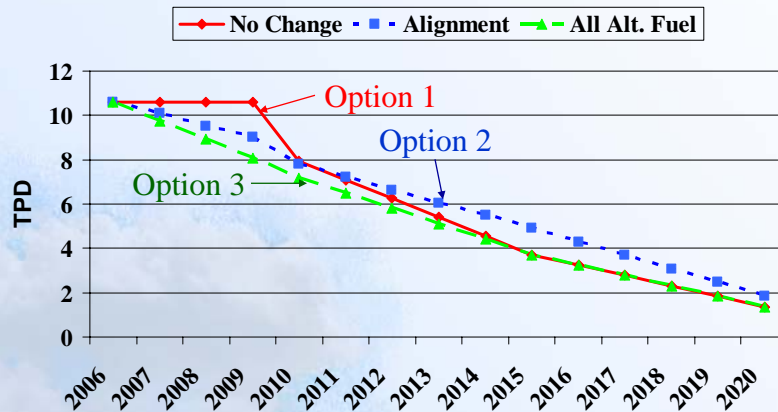
Option 2: Alignment

- Align With 2007+ Truck Engine Standard
- Purchase of Cleaner Diesel Engines Beginning in 2007
 - Older Urban Buses Replaced
- 1.6 tons of NO_x per Day in 2009
 - Slightly Higher NO_x Post-2010

Option 3: Mandatory Alternative Path

- All Diesel Path Agencies Moved to Alt. Path Through 2015
- Purchase of Alt. Fuel Buses Increase
 - Deferred Purchases No Longer an Option
- 2.5 tons of NO_x per Day in 2009
 - Same Emissions as “No Change” in 2015+
- Higher Costs for Diesel Path Agencies
 - Cost Effectiveness (\$119,030 per Ton of NO_x)
- Requires New Rulemaking Process

Emission Reductions of 3 Options



Today's Staff Proposal

- Option 2: Align with Truck Engine Standard Beginning 2007 at 1.2 g/bhp-hr NOx
- Provide NOx Mitigation When Purchasing Higher Emission Diesels
 - Diesel Path Transit Agencies with Fleets >30
 - One NOx Retrofit For Each Purchase
 - Verified Retrofit at 25%+ NOx Reduction
 - Limited to Available Urban Buses

Issues Remaining

- Many Smaller Diesel Path Transit Need to Purchase Buses Now
 - Staff's Proposal Allows Diesel Purchases
- Switch to Alt. Fuels Disruptive
 - Diesel Path Agencies Oppose
 - Capital Costs High
 - No Difference in Emissions in 2010+ Buses
- Alignment Signals Lack of Support for Alternative Fuel
 - 62% Fleet with Alternative Fuel Path Transits

Recommendation

- Adopt Option 2 – Alignment with the Truck Engine Standard
 - Require NOx Retrofit for Fleets Greater than 30.